

REMARKS

Claims 1-14 are pending in the present application. Claims 15-30 were previously withdrawn.

Reconsideration of the application is respectfully requested in view of the following responsive remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

In the office action of May 16, 2006 the following actions were taken:

- (1) Claims 1-6, 9 and 11-13 were rejected under 35 U.S.C. 102(b) and/or 102(e) as being anticipated by U.S. Pat. 6,921,500 to Feenstra (hereinafter "Feenstra") also published as WO01/13815.
- (2) Claims 7-8, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Feenstra.

It is respectfully submitted that the presently pending claims be examined and allowed. Applicants submit that each and every amendment herein, and throughout the prosecution of the present application is fully supported by the specification as originally filed, and that no new matter has been added.

Rejections under 35 U.S.C. § 102

The Examiner has rejected claims 1-6, 9 and 11-13 under 35 U.S.C. 102(b) or 102(e) over Feenstra and the related WO01/13815 publication.

Before discussing these rejections, it is thought proper to briefly state what is required to sustain such a rejection. It is well settled that "[a] claim is anticipated only if each and every element as set forth in the claims is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of California*, 814 F.2d 628, 2 U.S.P.Q. 2d 1051, 1053 (Fed. Cir. 1987). In order to establish anticipation under 35 U.S.C. 102, all elements of the claim must be found in a single reference. *Hybritech, Inc. v. Monoclonal Antibodies, Inc.*, 231 U.S.P.Q. 81, 90 (Fed. Cir. 1986), *cert. denied* 107 S.Ct. 1606 (1987). In particular, as pointed out by the court in *W.L. Gore & Assoc., Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1981), *cert denied*, 469 U.S. 851 (1984), "anticipation requires that each and every element of the claimed invention be disclosed in a prior art reference." "The

identical invention must be shown in as complete detail as is contained in the...claim." *Richardson v. Suzuki Motor Co.* 9 U.S.P.Q. 2d 1913, 1920 (Fed. Cir. 1989).

Feenstra and the related WO01/13815 publication teach a method for fabricating a functional dental element. Specifically, the method involves the printing of a flowable mass of curable nanomeric material to form layers which are cured so as to bond the printed layers together. The curable nanomeric materials consist "of nanomeric, inorganic solid particles having polymerizable and or polycondensable organic groups at their surface." Col. 2, lines 50-53. Feenstra does not teach that the nanomeric material is present in a build material in an amount of from 0.1 wt% to 20 wt%.

Claim 1 of the present application is drawn to a solid free-form fabrication system for producing a three-dimensional object. The system includes a build material having nanofiller particulates dispersed therein, a dispensing system adapted to ink-jet the build material, and a curing system adapted to harden the build material after being dispensed. The claim further requires that the nanofiller particulates be dispersed within the build material at from 0.1 wt% to 20 wt%.

Feenstra and the related WO01/13816 publication do not teach that the nanofiller particulates be present in a build material from 0.1 wt% to 20 wt%. As such, they do not teach each and every element of the present invention. Therefore, it is respectfully requested that these rejections be withdrawn and claim 1 and its related dependent claims be allowed.

Rejections Under 35 U.S.C. § 103

The Examiner has also rejected claims 7, 8, 10, and 14 as being obvious in view Feenstra. The Applicant respectfully submits that these claims are patentable over the cited reference. Before discussing the obviousness rejections herein, it is thought proper to briefly state what is required to sustain such a rejection. The issue under § 103 is whether the PTO has stated a case of *prima facie* obviousness. According to the MPEP § 2142, the Examiner has the burden and must establish a case of *prima facie* obviousness by showing the prior art reference, or references combined, teach or suggest all the claim limitations in the instant application. Further, the Examiner has to establish some motivation or suggestion to combine and/or modify the references, where the motivation must arise from the references

themselves, or the knowledge generally available to one of ordinary skill in the art. The Applicant respectfully asserts the Examiner has not satisfied the requirement for establishing a case of *prima facie* obviousness in any of the rejections.

It is noted that the limitation from 10 regarding the wt% of the nanofiller particles in the build material has been amended into claim 1 and as such now extends to each of claims 7, 8, 10, and 14. With regard to the above mentioned limitation, the Examiner alleges that Feenstra's teaching of providing a concentration of nanomeric material between 25 and 60 wt%, based on the weight of the dispersion renders the limitation of 0.1 to 20 wt% obvious. Specifically, the Examiner stated "one of ordinary skill in the art at the time of the invention would have been motivated to determine the optimum weight percent of the particles to provide the desired viscosity for a particular dispensing technique and the desired thickness for three-dimensional accuracy, wherein the claimed 20% is close enough to the disclosed "preferred" 25% taught by Feenstra to have been obvious to one having ordinary skill in the art at the time of the invention." The Applicants respectfully disagree with the Examiner's assertions.

The Applicants dispute that the presently claimed ranges are "close enough" to be rendered obvious by the teaching of the "preferred" 25 to 60 wt%." In order to arrive at the highest of the presently claimed range, 20 wt%, the lowest claimed value of 25 wt% would have to be decreased by at least 20%. Such a variation, especially in light of the fact that the preferred and only range taught by Feenstra has a lower limit of 25%, would not be obvious.

In addition to this, Feenstra's teaching that 25 to 65% is the "preferred" inherently teaches away from values outside the range, especially since it is the only range given. By stating that the range is "preferred" one skilled in the art would assume that the "preferred" range was in fact the range that works well, otherwise, why would it be considered preferred.

It is also noted that the present ranges are drawn to the amount of nanofiller dispersed in the building material, or in other words, the weight percentage is based on the building material and the nanofiller only. In contrast to this, the ranges taught by Feenstra are described as being "based on the weight of the dispersion." In order to qualify as including a building material, the Feenstra dispersion must include a monomeric solution. The monomeric solution is defined to be "a mixture of UV

photopolymerizable monomers in a solvent suitable therefore.” As such, the ranges are not analogous in their defined coverage.

The Examiner further alleges that one skilled in the art would be motivated to optimize the range based on a desire to provide a viscosity for a particular dispensing technique or desired thickness for three dimensional accuracy. Such an assertion lacks support in both Feenstra and the present application. Nowhere in either Feenstra or the present application is there any teaching or suggestion that the viscosity or three dimensional accuracy of the systems can be varied by varying the percentages of nanofiller material in the build material. On the contrary, Feenstra teaches that the disclosed “preferred” ranges can in fact be ink-jetted using piezo inkjet printer, implying that the viscosity does not need to be modified for it to be jetted. Additionally, the present application teaches various techniques for modifying viscosity or other jetting properties such as heat to liquefy the material and/or liquid modifiers such as water, surfactants, organic solvents etc; however, none of the taught techniques include adjusting the amount of nanofiller.

As discussed above, the Feenstra reference does not disclose each and every element of the presently pending application, specifically, it does not disclose the required range of nanofiller in the build material. Additionally, the claimed range is distinct from the range disclosed in Feenstra in that 1) the upper end of the present application range is 20% lower than the lowest end taught in Feenstra and 2) the definitions of the ranges are different in that the presently claimed range is based on the weight percent of only the build material and the nanofiller while Feenstra’s weight percent is based on the entire dispersion, including a solvent. Additionally, Feenstra teaches away from the presently claimed range in that the only range taught in Feenstra is described as the “preferred” range, implying that the range is the workable range. In light of this, no motivation exists for one skilled in the art to alter the cited reference. Therefore, the present invention is not obvious in view of Feenstra, and as such, it is respectfully requested that this rejection be withdrawn and all of the pending claims be allowed.

In view of the foregoing, Applicants believe that claims 1-14 present allowable subject matter and allowance is respectfully requested. If any impediment to the allowance of these claims remains after consideration of the above remarks, and such impediment could be removed during a telephone interview, the Examiner is

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invited to telephone W. Jeff Limon at (541) 715-5979 so that such issues may be resolved as expeditiously as possible.

Please charge any additional fees except for Issue Fee or credit any overpayment to Deposit Account No. 08-2025.

Dated this 17th day of July, 2006.

Respectfully submitted,



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